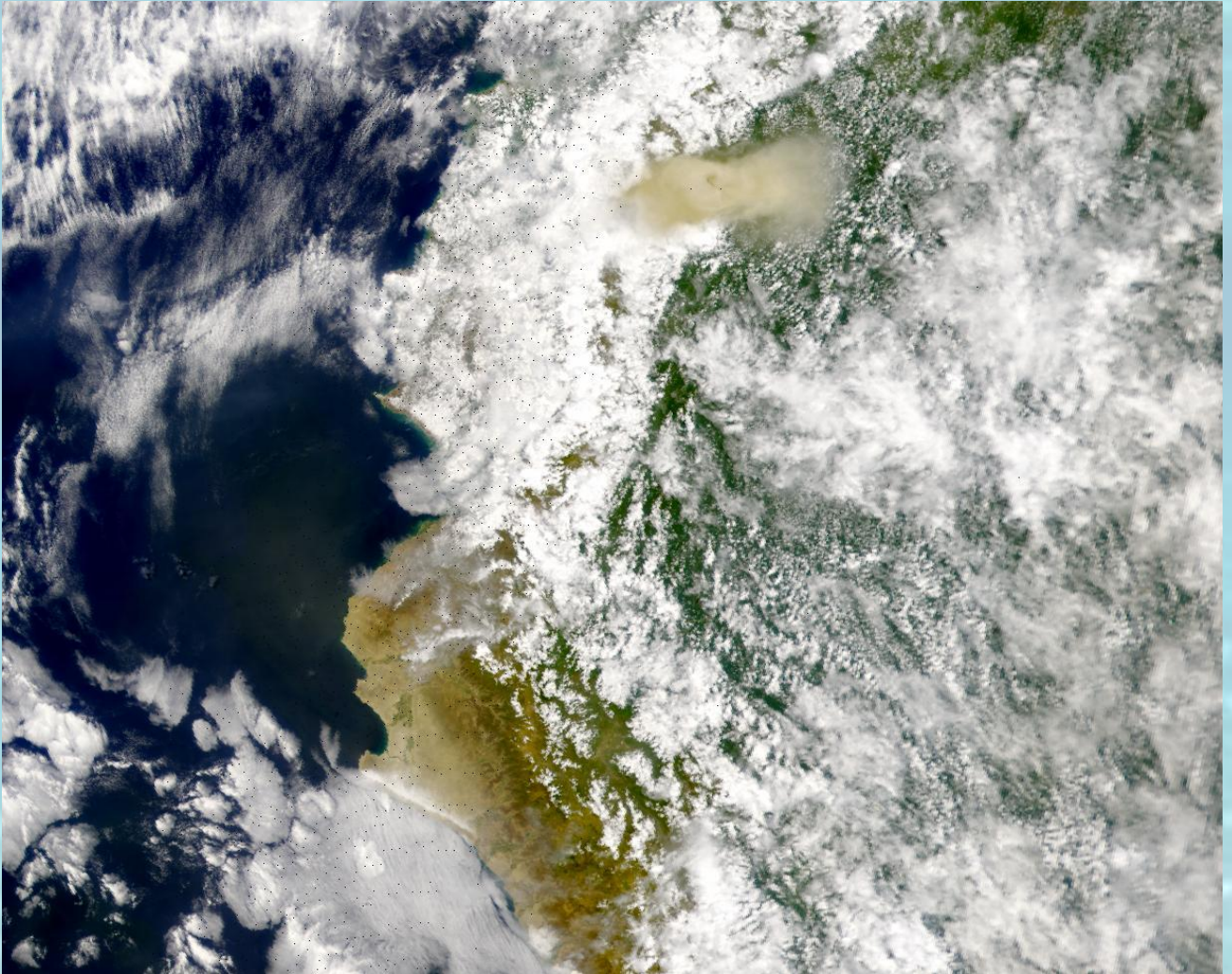


SCIENCE FOCUS: Volcanoes

SeaWiFS Views Volcanoes, Part 2

El Reventador



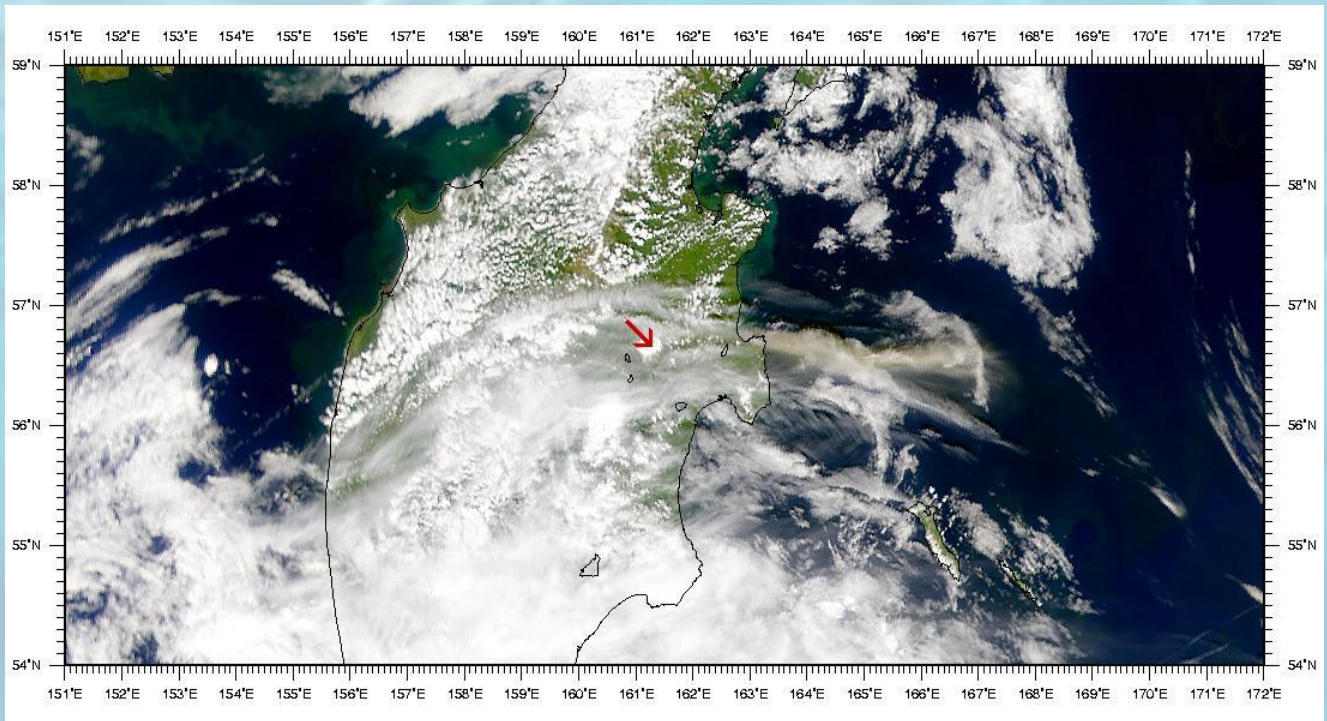
SeaWiFS image of the eruption plume from El Reventador volcano, Ecuador, acquired November 3, 2002.

The first *Science Focus!* article that provided SeaWiFS images of volcanic activity was appropriately entitled [SeaWiFS Views Volcanoes](#). About eighteen months passed since this article was published, and SeaWiFS has captured more striking images of volcanic eruptions around the world. Some of these eruptions caught ground observers by surprise, and SeaWiFS was fortunately positioned to view these eruptions from space.

The image on the previous page is of an eruption of the El Reventador volcano in Ecuador, acquired on November 3, 2002. The ash plume of the volcano is emerging above the clouds that rise over the Andean highlands. Ash from this eruption fell heavily on the capital city of Quito located 60 miles southeast of the volcano.

[Reventador, Ecuador](#) has images of the November 3 eruption and subsequent activity.

Shiveluch



Eruption plume from an eruption of Shiveluch volcano (red arrow) on the Kamchatka peninsula, Russia, acquired August 30, 2000.

One of the most remote volcanically-active regions in the world is Russia's Kamchatka peninsula. Shiveluch volcano has been rumbling there for several months. Cloud cover in this frigid northern region is persistent, so this image of an ash plume from an eruption of Shiveluch was a very lucky "catch".

Kamchatkan, Aleutian, and Alaskan volcanoes pose a definite danger to aircraft, as the flight paths of many trans-Pacific flights from the United States to Asian destinations pass over this area frequently. On December 15, 1989, a KLM 747 jet encountered an ash plume from an eruption of Redoubt volcano on the Alaska Peninsula. The ash entered the jet engines, melted, and caused the shutdown of all four engines. The crew was able to restart one engine just seconds before the plane crashed. Due to the ongoing threat to aircraft posed by ash plumes from volcanic eruptions, the [Alaska Volcano Observatory](#) monitors the activity of Alaskan and Kamchatkan volcanoes and posts alerts when volcanic eruptions are threatening or in progress.

[Monitoring of Shiveluch with video clips \(IVGG, Russia\)](#)
[Kamchatkan Volcanic Eruption Response Team \(KVERT\) Fact Sheet](#)

Mt. Etna



SeaWiFS image of ash plume from the flank eruption of Mt. Etna, Sicily (center of image) acquired on July 22, 2001. Also note haze from Saharan dust over the Mediterranean Sea on the western side of the image.

The massive volcano Mt. Etna on the island of Sicily in the Mediterranean Sea is so frequently active that it rarely catches volcanologists by surprise, but the flank eruption that began on July 18, 2001 actually did. Etna had been providing spectacular activity from its summit craters for several years, and that activity was relatively safe to watch and popular with tourists.

Flank eruptions, where the activity takes place on the sides of the volcano, are a different matter. This flank eruption of Etna created several new cinder cones and lava flows, and the lava flows damaged or destroyed parts of a popular tourist center despite efforts to divert them. In addition, the heavy plumes of ash forced the closure of the local airport in Catania several times.

After taking a break for several months, Etna came to life again late in October 2002 with an even more powerful flank eruption that continued into January 2003.

[Stromboli On-Line's Etna section](#) has marvelous photographs and videos of Etna's activity.

Mount Oyama (Miyakejima Island)



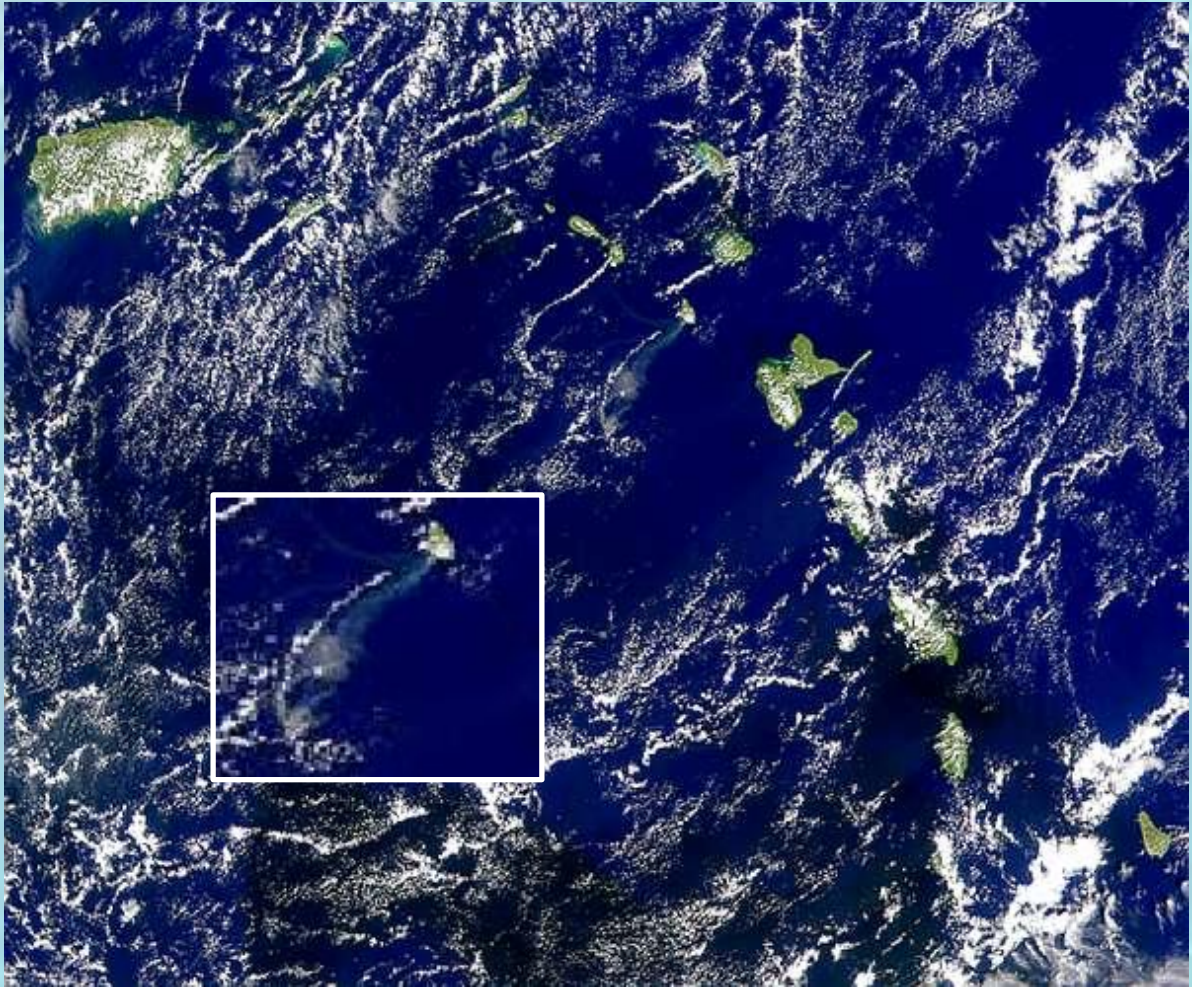
SeaWiFS image of eruption plume from Mt. Oyama, Miyakejima Island, Japan, acquired on August 19, 2000.

Japan's Mount Oyama on Miyakejima Island is rarely a threat to the main islands of Japan, because it's a considerable distance away. In fact, the spiraling low-pressure weather system located to the northeast of Japan in this image was probably more of a concern than the ash from the eruption of Mt. Oyama to the south.

However, the residents of Miyakejima Island, where Mount Oyama is located, were very concerned about this explosion, as was the government of Japan. So concerned, in fact, that the island's entire population of about 3,800 inhabitants were subsequently evacuated. In addition to the ash cloud, rain created the dangerous possibility of lahars (floods of volcanic ash mixed with water). The residents of Miyakejima Island began returning in 2005, and some were still waiting to return in 2011.

[The 2000 eruption at Miyakejima Volcano](#) (PDF) contains a spectacular ocean-level picture of the eruption plume on August 18, 2000.

Soufriere Hills, Mont Pelee, La Soufriere



SeaWiFS image of an ash plume from Montserrat's Soufriere Hills volcano, acquired on November 8, 1998. The enlarged inset image is to aid identification of the ash plume.

The image above shows a small plume of ash drifting away from small Montserrat Island in the Caribbean Sea. Like the residents of Miyakejima Island, many of the residents of once-idyllic Montserrat were forced to evacuate after the Soufriere Hills volcano became active in 1995. Less than one-quarter of the island's population remained after the volcanic activity continued, causing the eventual abandonment of the capital city of Plymouth before its destruction by pyroclastic flows.

The third large island to the south of Montserrat (after butterfly-shaped Guadeloupe and cloud-shrouded Dominica) is the island of Martinique. Martinique also has a volcano, named Mont Pelee.

The volcanoes on Martinique, Montserrat, and Miyakejima all have a similar eruptive "style" in which a dome of pasty, thick lava (andesite) grows slowly in the crater of the volcano. This dome is unstable, and as it rises, parts of it can suddenly collapse, triggering the fearsome volcanic phenomenon called a pyroclastic flow (or more poetically, the *nuee ardente* or "glowing avalanche"). Pyroclastic flows are clouds of superheated gas and ash that flow down the mountainside at high speed, lubricated by their own hot gas. Pyroclastic flows incinerate everything that lies in their path.

On May 8, 1902, following weeks of activity, a powerful eruption from Mont Pelee unleashed a pyroclastic flow that descended on the city of St. Pierre. Nearly 30,000 people died within minutes.

At the bottom far right edge of the image, the island of Barbados can be seen. West of Barbados is the island of St. Vincent, mostly covered with clouds (the island of St. Lucia, north of St. Vincent and northwest of Barbados, is largely cloud-free). In a strange linkage of events, La Soufriere volcano on St. Vincent erupted only hours before Mont Pelee on May 8, 1902, and the pyroclastic flows from La Soufriere killed approximately 1,800 people on this tragic date.

[Montserrat Volcano Observatory](#)

[Stromboli On-Line Montserrat section](#)

[Mont Pelee](#)